IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.:	10/722,123
Applicant:	Michihiro SHIBATA
Filed:	November 26, 2003
Title:	OPTICAL RECORDING MEDIUM AND METHOD FOR PRODUCING THE SAME
Group Art Unit:	1762
Examiner:	Kirsten Jolley
Docket No.:	Q78700

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. §1.132

Sir:

I, Michihiro Shibata, do declare and state as follows:

I received a Master's Degree in Science from Kyoto University in March 1996;

I joined Fuji Photo Film Co., Ltd. (currently, FUJIFILM CORPORATON) in April 1996, and since that time I have been engaged in the research and development of optical disc materials at the Research & Development Center, Magnetic Products Division (currently, Research & Development Center, Recording Media Products Division);

I am an inventor of the subject matter disclosed and claimed in the above identified patent application; and

I am familiar with the Office Action of March 23, 2007, and understand the Examiner's rejections therein.

The following additional experiments were carried out by me or under my supervision.

Comparative Experiment:

Each sample was prepared in the same manner as in Example 4 of the present specification except that the rotation speed of the substrate for two seconds during the step of from the beginning of the supply of the dye solution to the end of the supply of the dye solution, the rotation speed for the subsequent 15 seconds at the low-speed rotation step, and the final rotation speed after gradually increasing the rotation speed for 10 seconds after the low-speed rotation step, were set as shown in Table A below.

The noise level and the frequency of a reflection signal were measured as in Example 1 of the present specification, for each of the thus-obtained samples. Further, whether the dye layer is coated uniformly over the entire surface of the disc was checked by visual observation.

The results are shown in Table B.

Table A

Experiment No.	Invention/ Comparison	Relative humidity during coating (% RH)	Temperature during coating (°C)	Concentration of dye solution (%)	Rotation speed during a period from the beginning of the supply to the end of the supply (rpm)	Rotation speed of the low-speed rotation step (rpm)	Rotation speed after the end of low-speed rotation step (rpm)
1	Invention	45	30	0.78	500	250	increased to the final speed 2000
2	Invention	45	30	0.78	400	250	increased to the final speed 2000
3	Invention	45	30	0.78	500	400	increased to the final speed 2000
4	Invention	45	30	0.78	400	20	increased to the final speed 2100
5	Invention	45	30	0.78	800	400	increased to the final speed 2200
6	Invention	45	30	0.78	1000	400	increased to the final speed 2500
7	Comparison	45	30	0.78	200	150	increased to the final speed 2500
8	Comparison	45	30	0.78	218	150	increased to the final speed 2500
9	Comparison	45	30	0.78	300	250	increased to the final speed 2500
10	Comparison	45	30	0.78	350	250	increased to the final speed 2500
11	Comparison	45	30	0.78	2000	1000	increased to the final speed 3000.
12	Comparison	45	30	0.78	1500	400	increased to the final speed 2500
13	Comparison	45	30	0.78	1200	400	increased to the final speed 2500

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Table B

Experiment No.	Invention/ Comparison	Noise level of a reflection signal		Dye layer formation (visual observation)
		Level (dB)	Frequency (kHz)	
1	Invention	0.0	-	Uniformly formed over the entire surface
2	Invention	0.0	-	Uniformly formed over the entire surface
3	Invention	0.0	-	Uniformly formed over the entire surface
4	Invention	0.0	-	Uniformly formed over the entire surface
5	Invention	0.0	-	Uniformly formed over the entire surface
6	Invention	0.0	-	Uniformly formed over the entire surface
7	Comparison	29.7	16.6	Uniformly formed over the entire surface
8	Comparison	27.6	16.4	Uniformly formed over the entire surface
9	Comparison	16.6	22.2	Uniformly formed over the entire surface
10	Comparison	7.9	26.8	Uniformly formed over the entire surface
11	Comparison	Not measured	Not measured	A portion in which the dye layer is not formed was observed in the region outside a radius of 40 mm.
12	Comparison	Not measured	Not measured	A portion in which the dye layer is not formed was observed in the region outside a radius of 50 mm.
13	Comparison	Not measured	Not measured	A portion in which the dye layer is not formed was observed in the region outside a radius of 55 mm.

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Discussion:

(1) In Experiment Nos. 1 to 6 in which the rotation speed of the substrate during the period from the beginning of the supply of the dye solution to the end of the supply of the dye solution was 400 to 1000 rpm, the noise level was 0 dB, which means superior performance of the discs.

Compared with this, in Experiment Nos. 7 to 10, in which the rotation speed of the substrate during the period from the beginning of the supply of the dye solution to the end of the supply of the dye solution was 200 to 350 rpm, the noise level was high, which means inferior performance of the discs.

In Experiment Nos. 11 to 13, in which the rotation speed of the substrate during the period from the beginning of the supply of the dye solution to the end of the supply of the dye solution was 1200 to 2000 rpm, the dye layer was not formed uniformly. Therefore, without the need to measure the noise level, it was found that the discs of Experiment Nos. 11 to 13 had inferior properties.

(2) In Comparative Example 6 of the present specification, although the rotation speed of the period from the beginning of the supply of the dye solution to the end of the supply of the dye solution was 500 rpm, the low-speed rotation step after that was not performed, and instead, the same rotation speed was maintained. The degree of modulation and jitter changed depending on the position of the disc (distance from the rotation center) in Comparative Example 6 as shown in Table 2 of the specification.

On the contrary, in Example 4 of the present specification, the disc was prepared according to the process of the present invention in which the rotation speed of the period from the beginning of the supply of the dye solution to the end of the supply of the dye solution was 500 rpm, and the rotation speed of the low-speed rotation step thereafter was 250 rpm. The degree of modulation and jitter of Example 4 were uniform at any position as shown in Table 2 of the specification.

(3) It is apparent from the above results that the present invention provides an optical disc which exhibits superior performance.

Conclusion:

The present invention provides unexpectedly superior results.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

DATE: July 10, 2007

Michihiro Shibata

Michihiro SHIBATA